



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Organization of new product development process [N1IBiJ1>OPProd]

### Course

Field of study

Safety and Quality Engineering

Year/Semester

3/5

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

part-time

Requirements

elective

### Number of hours

Lecture

9

Laboratory classes

0

Other

0

Tutorials

18

Projects/seminars

9

### Number of credit points

4,00

### Coordinators

dr Katarzyna Kalisz-Szwedzka

katarzyna.kalisz-szwedzka@put.poznan.pl

dr inż. Roma Marczevska-Kuźma

roma.marczevska-kuzma@put.poznan.pl

### Lecturers

### Prerequisites

Student has knowledge of business processes, design, organization and implementation of the production processes, as well as in the area of design, evaluation, verification and implementation of production. Student is responsible and can interact with others and work in a team. Student understands the need for lifelong learning and acting in accordance with the rules.

### Course objective

Presenting knowledge of theoretical and practical problems connected with organization of production preparation and selected methods applied in this scope.

### Course-related learning outcomes

Knowledge:

1. Knows concepts of technical safety, safety systems, Occupational Health and Safety and problems of hazards and their consequences [K1\_W02].

2. Knows advanced knowledge about concepts of the life cycle of industrial products and life cycle of objects, systems and technical systems [K1\_W06].
3. Knows advanced knowledge about concepts of engineering management in the field of product and process [K1\_W07].
4. Knows the fundamental problems of modern civilization and development trends as well as best practices [K1\_W10].

#### Skills:

1. Is able to communicate using appropriately selected resources in a professional environment and in other environments [K1\_U02].
2. Is able to make a critical analysis of the way it functions and assess - in conjunction with Safety Engineering - existing technical solutions, in particular machines, devices, objects, systems, processes and services [K1\_U06].
3. Can design an object, system or process that meets the requirements of safety engineering using appropriate methods and techniques and make a preliminary economic assessment [K1\_U07].
4. Is able to identify changes in requirements, standards, regulations and technical progress and the reality of the labor market, and based on them determine the needs of supplementing knowledge [K1\_U12].

#### Social competences:

1. Is aware of the importance of knowledge in solving cognitive and practical problems in the scope of safety engineering and continuous improvement of the knowledge [K1\_K02].
2. Is aware of responsibility for own work and readiness to comply with the rules of working in a team and taking responsibility for the tasks carried out jointly [K1\_K07].

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

#### Rating forming:

- a) projects: on the basis of an assessment of the current progress of tasks,
- b) tutorials: on the basis of an assessment of the current progress of tasks,
- c) lecture: in the range of lectures based on oral answers to questions about the material covered in the current and previous lectures.

#### Rating summary:

- a) projects: grade point average, passing threshold: 60% of the points.
- b) tutorials: grade point average, passing threshold: 60% of the points.
- c) lecture: test, open and closed questions, passing threshold: 60% of the points.

### Programme content

Characteristics of the product and production process. Objectives, tasks and functions of product production preparation in industrial company. Organization structure of product preparation units. Systems supporting the design and production of products.

### Course topics

#### Lecture:

Production process components, range of tasks. Objectives, tasks and functions of product production preparation in industrial company. Constructive, technological and organizational preparation of the production - planning and designing, far-reaching and current activity.

Systems supporting the design and production of products. Curve of product life cycle. Costs of the production preparation. Documentation of production preparation and flow. Organization structure of product preparation units. Innovative processes in activity of industrial company.

#### Tutorial:

Linear correlation function, Analysis of production data by using KPIs, Evaluation of production effectiveness by using OEE, Pareto analysis based on acquired production data.

#### Project:

Arranging the course of any production process.

### Teaching methods

Lecture - multimedia lecture, case study analysis.

Projects - multimedia lecture, work in teams, problem-solving tasks set by the teacher, presentation of solutions and forum discussion group.

Tutorials - multimedia lecture, work in teams, problem-solving tasks set by the teacher, presentation of solutions and forum discussion group.

## Bibliography

Basic:

1. Kawecka-Endler A., Organizacja technicznego przygotowania produkcji - prac rozwojowych, Wyd. Politechniki Poznańskiej, Poznań 2004.

2. Szatkowski K., Przygotowanie produkcji, PWN Warszawa 2013.

3. Lewandowski J., Skołud B., Plinta D., Organizacja systemów produkcyjnych. Polskie Wydawnictwo Ekonomiczne, Warszawa 2014.

4. Pająk E., Klimkiewicz M., Kosieradzka A., Zarządzanie produkcją i usługami, Polskie Wydawnictwo Ekonomiczne, Warszawa 2014.

5. Mazur A., Marczevska-Kuźma R., Assessment of Importance of Conditions and Safety of Work for Shaping Management Image, Procedia Manufacturing, 2015, vol. 3, s. 4884-4891.

6. Szwedzka, K., Szafer, P., Wyczółkowski R., (2017), Structural analysis of factors affecting the effectiveness of complex technical systems, 30-th IBIMA Conference Proceedings.

Additional:

1. Marczevska-Kuźma R., Sergot M., Inspection of radiation "doses" of X rays in dental practice [w:] Advances in mechanical engineering, red. Olaf Ciszak (WIM), Wydawnictwo Politechniki Poznańskiej, Poznań, 2021, s. 65-71.

2. Szwedzka K., Szafer P., Gruszka J., (2016), Impact of technical and technological changes on energy efficiency of production company - case study, Mod Tech International Conference, Romania 2016 (10-th of June), Materials Science and Engineering Organization and Management of Industrial Processes, Vol.145.

3. Lange R., Ładna A., Konopczyński D., Kowalczyk M., Sztuczna Inteligencja w społeczeństwie igospodarce, NASK Państwowy Instytut Badawczy, Warszawa 2019.

4. Wójcik J., Wybrane problemy w przygotowaniu produkcji nowego wyrobu w małych i średnich przedsiębiorstwach, Zeszyty Naukowe Politechniki Śląskiej "Organizacji i Zarządzania", z. 83, Nr. kol. 1941, 2015.

5. Golińska P., Fertsch M., Organizacja produkcji i logistyki w przemyśle samochodowym, Wydawnictwo Politechniki Poznańskiej, Poznań 2012.

6. PN-EN ISO 9001:2015 Systemy zarządzania jakością wymagania.

7. PN-ISO 45001:2018 Systemy zarządzania bezpieczeństwem i higieną pracy. Wymagania i wytyczne stosowania.

## Breakdown of average student's workload

|                                                                                                                                         | Hours | ECTS |
|-----------------------------------------------------------------------------------------------------------------------------------------|-------|------|
| Total workload                                                                                                                          | 100   | 4,00 |
| Classes requiring direct contact with the teacher                                                                                       | 39    | 1,50 |
| Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation) | 61    | 2,50 |